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System of Employment

at the

Carl Zeiss Works at Jena.



1910

WITHIN little more than sixty years the famous **Optical Instrument Works** at Jena have evolved from the humble workshop which **CARL ZEISS**, then scientific instrument maker to the University (*Universitätsmechanikus*) had established in 1846. During the first thirty years of its existence the undertaking grew steadily without however assuming the dimensions of a factory. The succeeding period of thirty years, however, witnessed developments by which its general character became wholly changed under the influence of widely extended commercial relations and by the magnitude of its operations. A highly systematised process of manufacture under advanced modern conditions gradually displaced the methods of the small manufacturing optician, whilst by the number of its employees and its commercial and internal organisation the establishment has long since acquired the character of a large manufacturing concern. Whilst thus passing through phases which entirely transformed its industrial position the growth of the establishment has been dominated by a fixed and fundamental principle from which it has never swerved. As the founder had from the first recognised the power that lay in **a close bond between pure science and the industrial arts** so have his colleagues and successors likewise remained loyal to this guiding principle. Unlike his competitors **CARL ZEISS** realised from the outset that in the construction of so intricate an instrument as the microscope the rule of thumb must needs make room for the purely rational methods of mathematical analysis and design. What **CARL ZEISS** had recognised and initiated **ERNST ABBE** was destined to complete with such entire success that it became possible to predetermine by computation all the constructive data of a microscope in every detail and with mathematical rigour. Indeed this principle of complete mathematical predetermination has now become a universal element in the workshop practice of the great firm in which it originated.¹

¹ Cf. Memorial address given by Prof. E. ABBE on Dec. 12, 1896 on the occasion of the 50th anniversary of the establishment of the Optical Works. Reprinted (in German) in ABBE's Writings on Social Politics. p. 61 ff.

During the first period of its existence the firm devoted its labours exclusively to the production of microscopes, but as its resources grew its operations were extended to numerous other departments of practical optics. Apart from microscopes for research and for industrial purposes the firm carries on the systematic manufacture of photo-micrographic instruments and appliances for visual and ultra-violet light, lantern and projection apparatus, instruments for the observation of ultra-microscopic particles — including many practical applications of this method for industrial purposes, e. g. for the examination of textile products —, also photographic lenses stereoscopes, binoculars and telescopes, optical measuring instruments for surveying, and physical and chemical research, astronomical observations, and for use in the army and navy.

In a measure as the firm extended the range of its manufactures the output increased continuously, and with it naturally the number of its employees. In 1877, when the workshop had already existed 30 years, the firm employed only 36 persons, whilst in 1888 the number of employees rose to 300, in 1891 to 500, in 1896 to 800, until it exceeded 1000 in March 1900 and 2000 in June 1908.

It may be interesting here to record the number of employees for the successive years from 1900 to 1910.

End of year	Number of Employees		Total	Included staff in branches
	in the works	in administrative technical and com- mercial capacities		
1900	984	130	1114	
1902	1133	176	1333	24
1904	1125	190	1355	40
1905	1254	208	1502	40
1906	1301	247	1610	62
1907	1452	298	1818	68
1908	1638	334	2104	132
1909	2084	323	2576	169
1910 March	2213	327	2713	176

Branches have been established in Berlin, Frankfort o/Main, Hamburg, London, Vienna and St. Petersburg for the distribution and direct supply of the firm's productions and for the execution of small repairs. Branch works exist in Vienna since 1906, at Riga since 1908, at Gyor in Hungary and at London since 1910.

The event which more than any other determined the future growth and greatness of the Zeiss Works was the accession of ERNST ABBE¹ in 1866, who on the death of Dr. h. c. CARL ZEISS², which occurred on the 3rd December 1888, and the subsequent retirement in 1889 of his son, Dr. RODERICH ZEISS, acquired the sole control of the concern, and on the 1th July 1891 created the Carl Zeiss Stiftung³, to which he transferred the ownership of the Optical Works and a controlling share in the affiliated Glass Works of Schott & Genossen.⁴ Prof. ERNST ABBE completed the donation on the 26th July 1896, and on the 16th August 1896 the Statute of the Stiftung formulated by him were ratified and invested with statutory force by the Grand-ducal Government of Saxe-Weimar. In 1891 he transferred to the Stiftung his entire personal estate within the limits allowed by the laws of the country and accepted for himself a position on the Board of Managers.⁵

The donor has in the following words outlined the aim and purpose of the Carl Zeiss Stiftung:

A. Objects relating to the work and welfare of the two affiliated establishments:

1. To carry on and develop under a title deed of impersonal ownership, those branches of precise technical industry which under the active cooperation of the founder have been established in Jena by the two sister works;
2. To make permanent provisions for the economic security of the said undertakings, and to maintain and further develop their existing industrial labour organisation as a means of providing a livelihood to a large number of people and also as a useful instrument for furthering scientific and practical interests.

¹ Born on Jan. 23, 1840 at Eisenach, where his father, ADAM ABBE, was a spinning mill operative. He died in Jena on Jan. 14, 1905.

² Born on Sept. 11, 1816.

³ "*Stiftung*" in German signifies a donation made under certain conditions to ensure the continuity or permanence to individuals or the public of the benefits arising from it.

⁴ The Glass Works of Schott & Genossen was established in 1884 and, like the Zeiss Works, is a thriving establishment. It employed 217 persons on the 1st October 1897, 354 on the 1st October 1899, 860 on the 1st April 1908, 1060 on the 1st April 1909, 1175 on the 1st April 1910. On the 1st April 1910 the two affiliated concerns numbered jointly 3880 employees.

⁵ "*Mitglied der Geschäftsleitung*".

3. To fulfil higher social duties than personal proprietors would permanently guarantee towards the totality of co-workers in its employ, in order to better their personal and economic rights.

B. Objects of the Stiftung outside the Works. Any surplus which may remain after the immediate aims as defined in the preceding paragraph have been satisfied in every respect is to be applied by the CARL ZEISS Stiftung towards the following more or less external objects:

1. To promote the general interests of the branches of precise optical and technical industry.
2. To take part in organisations and measures designed to promote the welfare of the working population of Jena and its surrounding districts.
3. To encourage the study of mathematics and the natural sciences both as regards research and teaching.

Respecting the manner in which these objects were to be realised articles 101 to 105 of the Statute of the Stiftung contain detailed explanations and directions. To bring the aims laid down in the last paragraph well within the range of practical politics Prof. ERNST ABBE created on behalf of the Foundation and for the benefit of the University of Jena a special endowment which was to be known as the "University Endowment Fund of the Carl Zeiss Stiftung" (*Universitätsfonds der Carl Zeiss-Stiftung*). The objects to which the funds so provided can be applied were considerably extended by a Supplementary Deed dated February 24, 1900. By the provisions of the articles contained in this supplementary deed the means furnished by the University Endowment Fund may be applied through the channel of separate or continuous grants to meet the cost of personal service or other expenditure in any shape or form and without regard to academic faculty to carry on work calculated directly or indirectly to promote scientific research or to enhance the teaching resources of the University in relation to mathematical subjects and the natural sciences, commercial law, hygiene technology etc., in so far as they have a direct bearing upon the higher objects of the Carl Zeiss Stiftung. The funds are available for these purposes so long as the university professors and lecturers are permitted to teach without academical restrictions and to enjoy full political and personal freedom in common with other citizens. The endowment has provided sufficient

funds to sustain the University even in times of its very existence being threatened by a crisis and it secures its future for an indefinite period.

The rare qualities of ERNST ABBE's mind and character found a concrete expression in the success of his work and the influence which he exercised. By his scientific work and technical achievements he opened out entirely new paths; he created and governed with conspicuous ability an undertaking of vast dimensions; by renouncing his claims to a vast fortune and transferring it, stripped of all personal ownership, to a foundation built upon a magnificently conceived plan, as disclosed in the Statute of the Stiftung which he formulated he betrayed the grandeur of his nature, whilst the elaboration, along advanced lines, of a system which was to secure equitable rights to all employed alike marks him as a humanitarian endowed with exceptional insight.

The rights of the employees are dealt with in Chapters V and VI of the Articles of Incorporation, sections 56 to 99, and are also practically defined and circumscribed in the text of the Contract of Service adopted by the Optical Works, in the Regulations relating to Pensions, and those concerning the Sick Fund.

The objects which ABBE had in view when formulating the terms of the Contract of Service as applicable to all employees without distinction was to replace the provisions of the German laws affecting the rights of wage earners and the respective sections of the commercial code by a more equitable private contract of service. ABBE held that the needs of the people and the interests of the State demanded imperatively the revival of a healthy middle class through the medium of powerfully organised manufacturing corporations, whilst every worker should have full civil rights. He saw no means of attaining this end except by permanently placing every man and woman employed in manufacture upon a legally assured footing in relation to the capitalist employer and his organisations, as regards the workers personal as well as their economic welfare. He could not but look upon all benevolent institutions conducted with intentions which did not embody an attempt to fundamentally alter the statutory rights of the worker in relation to the employing organisation as "very estimable in their way, useful and gratifying, but purely as a decoration when viewed from a broader social aspect." Indeed, in this very

aesthetic aspect there lurks a dangerous quality apt to mask defects which in its absence would be glaringly obvious. To quote ABBE's words: "As matters now stand, it is better that the walls of the edifice of public economy should be bare and in full view of everybody so that one may see the materials of which it is built. Plaster and ornate mouldings will only serve to hide that which is behind."

In keeping with this fundamental principle in his social policy Art. 56 of the Statute of the Stiftung provides that "The engagement of officials, technical assistants, clerks, and workmen must always be effected without prejudice as to their parentage, religion or political views." The promotion of an individual shall be solely determined by his capability and observation of the duties imposed upon him, whilst his conduct outside the business shall be merely regarded in so far as the discharge of his duties and the personal reputation as to public honour and good morals is concerned. The duties which devolve upon an employee by the terms of his contract of service are clearly defined in art. 57 of the Deed. The personal liberty outside the service is guaranteed in the following paragraphs: "No person is to be interfered with or influenced directly or indirectly outside his service in the free exercise of his ordinary personal and citizen rights, and employees of the works, workmen and officials, being elected to perform honorary duties in the service of the Empire, the State or the Municipality must upon their request always be granted the necessary leave of absence for the proper discharge of the duties of such office and during such times he shall be allowed full pay." (Art. 58, par. 1, art. 62, par. 4 and art. 70, par. 2.) "The employees of the business are to be in no wise restricted in representing their interests individually or collectively" (Art. 58, par. 2). These provisions relate to the right of combination and representation of the officials and workmen.

Apart from the rights assured to him the lot of a wage earner is primarily determined by the number of working hours and the magnitude of his wages. Benevolent institutions are of little significance to the worker when they are offered in connection with long hours and low wages. On the 29th March 1900 the optical establishment of C. ZEISS adopted the 8-hours working day, the Board of Managers having ascertained by vote the proportion of works employees who considered themselves able, and were also willing, to accomplish in 8-hours the same amount of

work which had previously been done in 9-hours, with the result that 614 were in favour of, 105 against the proposal. The influence of the reduction in the number of working hours upon the output has been recorded by ABBE in his famous paper¹ on the economic significance of a reduced working day in a factory.²

The hours of work during the period extending from the 15th March to the 14th October are 7 to 11.30 a. m. and 1.30 to 5 p. m., during the period from the 15th October to March 14 from 7.30 to 12 a. m. and again from 2 to 5.30 p. m. Pauses for intermediate meals have under these circumstances been discontinued. Engine attendants, boilermen, porters, cleaners, and yardmen work 9 hours.

To afford the works employees as well as those attached to other departments a reasonable opportunity for relaxation the Statute of the Carl Zeiss-Stiftung provides that after one year's service everyone employed in the works shall be entitled to a six days holiday whilst his usual pay continues, provided that at the beginning of the calendar year he was 20 years of age. If the claim comes into force in the course of the calendar year every two months entitles to one day's leave on pay, any complete odd month being reckoned as two months. An employee having given notice to leave may avail himself of the holiday allowance due to him during the term of notice. Every employee is entitled to a further leave of six days without pay. If an employee has not taken the holiday due to him in any one year he may prolong his holiday for a corresponding period the following year. The amount of pay wages paid under this head aggregated to Marks 25240 in 1907/8, and to Marks 28900 in 1908/9.

This gratification was extended, at the beginning of the year 1910, owing to the fact that the earnings of the employees on piece-work are considerably higher than the guaranteed wages, and that usually more money is spent during a holiday than on working days. Employees being with the firm for at least 5 years will receive an extra pay of 10 % of the guaranteed wages; after 10 years service 20 % will be given and after 20 years service 30 %. In

¹ loco cit. pp. 203—249.

² Previous to 1870 it was usual to work 10½ hours in the optical workshops of Germany, and Jena formed no exception. A little later the Jena works reduced the working day to 10 hours, about 1880 to 9½, and in 1891 to 9 hours. In 1900 the 9-hour day was reduced by a whole hour.

order that every employee shall have a real holiday 6 days must be taken in succession.

The manner in which wages are paid is determined by three distinct elements, viz. a fixed rate of weekly wages, the amount actually earned, and a supplementary wage or salary payable at the end of the financial year. All works employees from the day of their enrolment are placed on a footing of a fixed minimum wage the magnitude of which is subject to mutual agreement. Whilst this minimum may not be reduced according to art. 67 of the Deed it rises with continued service and according to ability. It is paid for temporary wage work, for shortage of hours in slack time, breakdowns for the statutory holidays and unavoidable absence etc. and supplies a basis of calculation for the assessment of compensation for discharge and for computing the amount of pensions. Piece workers are guaranteed a remuneration which shall at least equal the corresponding minimum time wage (cf. Art. 69 of the Deed of Incorporation and art. 9 of the Agreement of Service). Hence, where a piece worker in a given case does not reach the remuneration assured to him under the minimum wage clause he becomes entitled to payment on the time wage scale. Supplementary wages were paid under this head to the extent of Marks 3860 in 1907/8 and Marks 4940 in 1908/9. The majority of men of all grades work by the piece and secure thereby earnings which considerably exceed the standard rate of wage. Experimental and special work, which cannot be easily dealt with under the piece work system, is entrusted to a permanent staff of waged men who receive by way of compensation a weekly supplementary premium, which does not come under the provisions of the Deed. The entire workshop and office staff, with the exception of the managers,¹ becomes at the end of the financial year entitled to a bonus which takes the form of a percentage upon the annual income or earnings, the magnitude of this percentage being determined by the nett proceeds of the financial year and the condition of the labour market.

The average weekly earnings of all male workers² over 18 years of age for 48-hours work was:

¹ The Board of Managers is at present represented by Mr. MAX FISCHER (since 1895), Prof. R. STRAUBEL (since 1903), and Dr. WALTER BAUERSFELD (since 1908).

² Foremen, being salaried, are not considered in the determination of the average weekly wages.

year	exclusive of the bonus Marks	inclusive of the bonus Marks	mean number of persons
1903/4	29,06	30,51	999
1904/5	29,56	32,22	1180
1905/6	30,23	33,25	1246
1906/7	31,01	34,11	1295
1907/8	31,83	34,38	1456
1908/9	31,70	34,23	1803

Incidentally it may be mentioned that the wage workers consist of instrument makers, glass workers, fitters, turners, machine cutters, tool makers, mechanics, brass finishers, moulders, foundrymen, core-makers, dressers, engravers, dividers, metal polishers, lacquerers, stampers, drillers, cabinet makers, sheet metal workers, bookbinders, saddlers, labourers, warehousemen, packers, porters, etc. The average annual earnings of all men above 18 years of age inclusive of the bonus in the afore mentioned years amounted to Marks 1591, 1676, 1734, 1774, 1795, 1780 respectively. Striking an average for all men above 24 years of age and having a record of at least three years service the mean annual income amounted:

year	mean number of persons	to Marks
1903/4	644	1736
1904/5	723	1849
1905/6	771	1894
1906/7	789	1922
1907/8	842	1941
1908/9	885	1987

The annual percentage bonus on wages and salaries paid during successive years from 1895 to 1909 has been as follows:

year	percentage of wages and salaries a/c	year	percentage of wages and salaries a/c
1895/96	8	1902/03	—
1896/97	5	1903/04	5
1897/98	9	1904/05	9
1898/99	10	1905/06	10
1899/00	10	1906/07	10
1900/01	10	1907/08	8
1901/02	8	1908/09	8

It will be seen from this that an average bonus of 8 % has been paid during the 14 years that the system has been in operation. The bonus is payable to all works and office employees in the service of the establishment, with the only exception of those discharged under the provisions of the "Dismissal with Compensation" clause and those dismissed in accordance with art. 79 for gross offences (cf. Art. 98 of the Deed of Incorporation and art. 14 of the Agreement of Service).

Overtime on regular working days is invariably paid at a rate which is 25 % above the standard rate. Nightwork between the hours of 9 p. m. to 6 a. m. and work on Sundays is subject to an excess rate of 50 %, whilst double rates are paid for work performed on public holidays falling into the week. No obligation exists in the matter of overtime work, which is always subject to voluntary arrangement, excepting only such work as cannot be carried out during regular working hours without interfering with the ordinary working routine (cf. articles 3 and 7 of the Agreement and art. 61 of the Deed of Incorporation).

The fixed weekly rate of wage may not be reduced by reason of shortened hours in slack times or owing to an occasional insufficient supply of work in any department (cf. art. 6 of the Agreement).

Fines, pecuniary or otherwise, may not be imposed. In their place recourse is had to verbal admonition, or, in case of need, the defaulter receives a warning, which, if the objectionable act be repeated within a year, may be followed by a notice of dismissal without compensation (cf. Deed of Foundation, art. 79). These measures have been found in practice to fulfill their purpose entirely.

By the terms of the agreement wages are paid in respect of public holidays falling upon week days, viz. 2 or 3 days at Christmas, 2 at Easter, 2 at Whitsun, on Good Friday, Ascension Day, Day of Repentance, New Year's Day and the afternoon of the saturday preceding Whitsunday (cf. art. 5, par. 2 of the Agreement). The expenditure on this head amounted to Marks 55 600 in 1906/7, to Marks 61 700 in 1907/8, to Marks 66 700 in 1908/9.¹ The continuation of payment in respect of the statutory

¹ In the case of the Vienna Branch Works, which was established in 1906, the terms of the Agreement of service are modified so as to allow for the holy days of the Roman Catholic Church. In addition to the statutory holidays falling into the week the following catholic festivals are treated as regular working days: Epiphany, candelmas, SS. Peter and Paul, Corpus

holidays was regarded by Prof. ABBE as an act of common fairness in view of the fact that the existence of the public holidays leaves a man no option in the matter, frequently at a most inopportune time.

Payment is likewise allowed at the Optical Works to members of the fire brigade in respect of unavoidable absence occasioned by their duties, also to those ordered to attend revision meetings or called in for military service in the reserve (cf. Agreement, art. 5, par. 3). The firm allows one day's pay at the fixed time rate of wages in conformity with section 616 of the Civil Code in respect of absence occasioned by illness, in connection with certain domestic events, such as the birth of a child, removals, etc., the discharge of certain extraneous duties, such as attendance at the lawcourts in matters relating to guardianships, or the death of a member of the family, whilst one half of the time lost through military service is covered by payment at the full rate of wages (cf. Agreement, art. 5a). If, for instance, a man by serving 8 weeks loses 48 working days he receives 24 days wages and in addition six days leave of absence with full pay, and it should be noted that by the terms of the agreement he is bound to exhaust his six days leave during this period. These "unproductive wages", which aggregated in 1907/8 to Marks 6120 and 1908/9 to Marks 7660, show clearly that the employees at the Zeiss Works do not come under the heading of "day labourers".

This aspect is brought into view still more strikingly by the institution of the principle of "Compensation for Dismissal" (cf. Deed of Incorporation, art. 77). ABBE denounced as scandalous a system which permitted of large numbers of workers being induced to flock into manufacturing centres in busy and prosperous times to be again thrust upon their own resources as soon as business declined. He set himself to repress this evil. Recognising that even under such conditions as they exist in the Zeiss-Works it is not always possible to obviate the necessity of inflicting a dismissal, even in busy times — through changes in the methods of manufacture this or that man may become superfluous in some department whilst there may not be a suitable post for him in any of the other departments — ABBE formulated a clause which would at least facilitate the transplantation from one scene

Christi, Assumption, the Nativity of the B. V. M., Immaculate Conception, All Saints, Ascension, and the second Christmas Day, Easter Monday, Whitmonday and the afternoon preceding Pentecoste. Owing to the great number of Catholic festivals the Vienna Works allow four days only by way of an annual holiday.

of work to another and afford a reasonable measure of protection from the dire consequences of enforced idleness.

It has for this reason been provided that in the event of the dismissal of an employee whose engagement is terminable by notice and who has been in the employ of the firm more than six months and less than three years the pay of such employee shall continue for a period equal to one sixth of the time during which he has been in the employ of the firm. This applies, of course, to those cases only where the dismissal has not arisen from any cause for which the affected individual is himself responsible but solely from the discontinuation of certain operations, the introduction of improved methods of manufacture, or from technical changes.

Formerly compensation for dismissal was allowed to those only who had been in the firm's employ for three years at least. From the 1st April 1903 the claim for compensation for dismissal has been extended to those who have been in the service of the firm for at least six months and who are given notice of dismissal for internal working reasons.

The manner in which this provision operates may be illustrated by the case of a workman 23 years of age who, after having worked 66 weeks in the Optical Works at a fixed rate of Marks 21.—, could not be employed any further and accordingly received after his dismissal his usual wages paid out to him for a period of 11 weeks, or Marks 231.— in all.

After service extending over a period of 3—5 years dismissal under the conditions defined above entitles the person so dismissed to payment of his full wages for a period of six months. This obligation is not affected by any personal considerations so that even incompetency may not be urged as a motive for the dismissal of an employee of 3 to 5 years standing. Grave misconduct and repeated breaches of the terms of the agreement, as defined in art. 79 of the Deed of Foundation, constitute alone sufficient grounds upon which the payment of compensation may be refused. An employee who at the time of his dismissal has been in the employ of the firm for a period of from 3 to 5 years and was then in the receipt of a minimum weekly wage of Marks 25.— would accordingly receive a compensation of Marks 650.—, i. e. an amount covering 26 weeks wages, or Marks 572, if his wages were Marks 22 per week.

A service of 5 years entitles every employee at the Zeiss Works to a pension. Should nevertheless circumstances necessitate his

dismissal the loss of a pension thereby occasioned entitles him to a very substantial increase of the amount which is payable to him under the provisions of the "Compensation for Dismissal" clause. Under these circumstances an amount equal to a pension corresponding to one fourth of the expired time of service is payable by way of compensation. In accordance with the provisions of the Deed a turner 34 years of age who had been 78 months ($6\frac{1}{2}$ years) in the firm's employ and received a fixed wage of Marks 26.— became entitled by his dismissal to compensation amounting to Marks 1098.50. Similarly, a workman, say, with a record of 16 years service and having a fixed wage of Marks 23 would in the event of his dismissal become entitled to compensation amounting to Marks 2439.84. Since under these conditions the dismissal of an employee may in certain cases become a very costly matter it will be readily conceded that the system affords not only considerable security against nonemployment but indirectly operates even against dismissals as such, and thereby places the employees at the Carl Zeiss Works in a greatly favoured position. The highest payments under this head were made in 1902/3, when owing to several combined circumstances 60 to 70 opticians had to be dismissed. In that year Marks 28675 had to be disbursed by way of compensation for dismissal, whilst in 1903/4 the expenditure under this head amounted to Marks 6690, in 1904/5 to Marks 3960, in 1905/6 to Marks 13090, in 1906/7 to Marks 13900, in 1907/8 to Marks 2150, 1908/9 to Marks 5980.

How ERNST ABBE came to establish the principle of compensation for dismissal on the basis of a legally secured claim he explains in his "Annotations" to the text of the Deed in the following words:¹ "Consider the case of a man who remains for a lengthy period in the service of a manufacturing concern, apparently with the intention of attaching himself thereto permanently, largely to the advantage of the employer, while the latter by maintaining the arrangement fosters a tacit understanding that the employment is of a permanent nature. Yet suppose that at some later period the employer, for reasons of his own and without being coerced by dire necessity, decides to dismiss the employee in question, say, because his further employment has ceased to be advantageous or because of personal reasons which previously had not interfered

¹ Reprinted in ERNST ABBE "Writings on Social Politics", p. 262 et seq.

with the continuation of his employ. Then, surely, if we apply in an impartial spirit the principles of equity we shall find ourselves face to face with a monstrous abuse of power to the detriment of the weaker party. To any but a mind imbued with plutocratic principles it must appear as an obvious duty in all cases of this kind to provide an appropriate compensation for the collapse of the expectation which the employee was led to entertain and for the loss of opportunities which he might have embraced in the mean time but which in the supposed security of his position he has allowed to pass by. Moreover, it is from a purely social aspect extremely desirable that persons who lose their employment under these circumstances should in the shape of pecuniary compensation be furnished with the means of maintaining themselves whilst seeking fresh work and of meeting the incidental expenses occasioned by this search. Neglect of this elementary obligation must needs add to the army of the unemployed and to those who are chargeable upon the public rates.¹

The principle of legally secured claims to pensions is likewise an outgrowth of Prof. ABBE's social creed. He says in this connection: "When the necessity presented itself to my former colleagues and myself of dealing with the question of the Sick Fund and Old Age Pensions for our staff it was decided not to institute a "Pension Fund" on the model of benevolent institutions but simply to formulate a declaration to the effect that service of five years should by the terms of the agreement give an employee a legal claim to a pension in the event of the person so entitled becoming incapacitated, or in favour of his widow and orphans in the event of his death." ABBE urged that employers under the factory system, if it is not to resolve itself into a social evil and a prey upon the physical vitality of the people, should not be allowed to ignore the fact that industrial production uses up human energy as it does every other productive material, and hence the gradual exhaustion of the resources of the human labour machine should be treated on the same economic principles as the depreciation of inanimate machines.

Every member of the staff who enters the employ of one of the affiliated firms before the completion of his 40th year acquires after five years of service a legally assured claim to a pension for himself when infirmity or old age overtakes him, and for the

¹ loco cit. p. 353.

benefit of his widow and orphans in the event of his death. Employees cannot commence to qualify for the title of a pension until they have completed their eighteenth year. Pensions are computed on the basis of the fixed minimum scale of wages in the case of works employees or according to the monthly salary in that of members of the technical, administrative, and commercial staff. In the case of works employees having a record of 5 to 10 years service the magnitude of the pension is determined by the minimum time wage paid last up to a maximum of Marks 100 per month, up to Marks 120 per month after a service of 10 to 15 years, and up to Marks 140 per month after a service exceeding 15 years. In the case of foremen, assistants, clerks and other employees in the receipt of monthly salaries the pension bearing maximum incomes are respectively Marks 120, 160, and 200 per month in respect of 5, 10 and 15 years service. The pensions of those filling responsible positions are subject to special arrangement. The pension for disablement amounts from the beginning of the sixth to the end of the 15th year of service invariably to 50 % of the pension bearing wage or salary, beyond the 15th year it increases in each successive year by 1 % up to 75 %. The old age pension of 75 % of the pension-bearing wage or salary comes into force after the completion of the 30th year of service and at an age of not less than 65 years. The Widow's and Orphans' Pension secures to the widow $\frac{4}{10}$, to the orphan $\frac{2}{10}$, but not more than $\frac{4}{10}$ in all, of the old age pension which the husband and father would have received.

The pensions paid during the last few years showed the following figures: 1902/3 Marks 19080, 1903/4 Marks 20700, 1904/5 Marks 23860, 1905/6 Marks 26150, 1906/7 Marks 28630, 1907/8 Marks 35500, 1908/9 Marks 40250. The sums payable by way of pensions are still comparatively small since, despite its existence of 63 years, the establishment is manned by young individuals owing to the great influx of young people during the last 10 years. To ensure permanent resources for the adequate fulfilment of the obligation in respect of these pensions a certain portion of the surplus is transferred annually to the reserve funds, the amount so apportioned being calculated on the principles adopted by insurance offices. No premiums are charged for the maintainance of the claim, and the same applies since years to the Widow's and Orphans' Pensions. Infact, by art. 20 par. 3 of the Agreement of Service, the firms pledge themselves to pay

on behalf of all employees who have by a service of 5 years acquired a title to a pension the entire amount payable in accordance with the German laws relating to compulsory provisions for the aged and incapacitated. By way of a compromise the firm is entitled to deduct the respective statutory contributions from the amounts payable in the form of pensions, a right which is frequently waived in cases of demonstrable indigence.

To lessen the burdens occasioned by the death of the bread winner during the period of transition it was on the 1st April 1909 decided to continue the payment of the undiminished rate of salaries or wages for a period of three months after the occurrence of the death, irrespective of the time of service which the deceased had to his credit.

The many valuable privileges which the Agreement of Service carries with it renders its termination a matter of considerably greater weight than is the case in other undertakings. To protect an employee as far as possible from the permanent loss of these privileges an arrangement has been introduced by virtue of which a temporary inability on the part of the employee to comply with the terms of the agreement does not necessarily involve its termination but merely has the effect of suspending it for the time being. The temporary impediment should be due (a) to internal causes of momentous importance to the employee or his family, it being understood that the break in the service shall not exceed the period of one year and that it should be sanctioned by the Board of Managers; (b) to the exigencies of military service; (c) to detention on remand or imprisonment not exceeding six months, provided the circumstances of the case do not call for a summary dismissal without compensation. An employee of the Zeiss establishments may on his return from two or three years service in the army claim to be reinstated or compensated if he cannot be so reinstated.

The Workmen's Committee was called into existence by ERNST ABBE in the autumn of 1896. It held its first meeting in January 1897. The Committee consists of representatives elected by the various workshops departments. Their present number is 120. The election is made by direct ballot under the presidency of the two oldest members of every department. Every waged person over 18 years of age has a vote, but only those are eligible for representation on the Committee who have attained their majority and have been at least a year in the firm's employ. The election

takes place once a year. The workmen's Committee may not be refused a hearing by the Managers on any matters affecting the working of the undertaking.

So large a body as the entire Committee was found to be ill adapted to deal with the numerous discussions which are inseparable from the working of a large undertaking organized on democratic principles, and it failed to adequately represent the workers in matters of almost daily occurrence. The entire Committee has accordingly since years met on fewer occasions, in the presence of the Managers or otherwise, and since 1902 the representation of the men is entrusted to a Subcommittee of Seven. The latter meets once a week in private for the purpose of discussing notable occurrences affecting the wellbeing of the men and determining upon the attitude which should be adopted in each case. Important questions of general interest are discussed in conjunction with the managers at specially convened meetings at which also the managers may bring up questions for discussion. The proceedings of the Workmen's Committee, those of the Subcommittee, and of the Managers are drawn up in a Report, a copy of which is hung up in each of the workshops. In matters affecting certain individuals only the duty of the Subcommittee is generally undertaken either by the representative of the respective workshop department or the Chairman of the Committee. This applies to such matters as the interpretation and practical application in individual cases of certain provisions of the agreement and other institutions, disputes relating to payments by the piece and other differences between foremen and workmen, also special requirements of one or the other workshop department, new proposals, accusations, or grievances. In these consultations the Social Secretary acts on behalf of the Board of Managers, and the foremen, workmen, and committee members are expected to settle with him the points at issue as far as possible. Matters of this kind are not submitted to the Board of Managers unless the importance or gravity of the case demands it. This procedure secures the satisfactory and expeditious despatch of all matters arising out of the working of the system without interfering to any inconvenient extent with ordinary routine, whilst effectively excluding all cumbrous methods.

The working of the representative Committee has proved entirely satisfactory under this system and has become a living organ in the constitution of the undertaking. It is not improbably that which ABBE wished it to be, a body truly representative of workmen's

interests, and not a mere blind behind which the employer might hide himself and seek ultimate protection.¹

On the occasion of the next election in 1910 it is proposed to gather together the practical results of the last few years working and to formulate a set of committee regulations accordingly. It is also intended to introduce the principle of proportional elections.

A representative Office Staff Committee was instituted in 1908. In response to elections organised by the Board of Managers the various groups of technical assistants and clerks elected 13 deputies. All employees over 18 years of age and in receipt of a monthly salary are qualified to vote. Apprentices may not vote. Any employee over 24 years old and receiving a monthly salary, provided he has been two years in the employ of the firm, may offer himself for election on the Committee. The election is by ballot. Every year a new ballot has to take place.

In keeping with ABBE's fundamental social views the management of the the joint Sick Funds of the Optical Works and the Glass Works of Schott & Genossen is by the provisions of the Deed of Incorporation entirely in the hands of the insured themselves.² The firms have no voice on the committee of the Sick Fund, they have however a right to attend the meetings in an advisory capacity and are authorised to ensure that the administration conforms to the regulations. They have a right of veto in such matters as concern the contributions and changes in the regulations. Under the provisions of the imperial laws the two firms employ jointly a clerk-cashier whose duty it is to attend to the business of the Sick Fund Department.

The Sick Fund exacts at present from each member a contribution of $4\frac{0}{100}$ of the average earnings up to the limit of Marks 5.—, of which the firms contribute five eighths on behalf of those who have only an individual claim upon the fund and three eighths on account of those members who have families.

By art. 71 of the Deed of Incorporation the amount contributed to the Sick Fund by the firms shall be at least equal to the aggregate amount paid in by all the members. In 1909 the

¹ The objects of the workmen's Committee are set forth in a paper read by Prof. ABBE in 1902. This lecture will be found reprinted in his writings on Social Politics, p. 250, et seq.

² A Carl Zeiss Sick Fund was instituted as far back as 1875. On the 1st January 1885 it was remodelled on the lines prescribed by the German law of the 15th June 1883 and made to include the Schott Glass Works.

expenditure from the resources of the Sick Fund amounted to Marks 165540, of which Marks 44700 came under the head of family insurance. In the same year, taking the members and the two firms contributed each Marks 84810, of which Marks 60770 was the share paid by the Optical Works. The Reserve Funds on the 31st December 1909 amounted to Marks 173150, and the membership was 3421.

The claims upon the Fund are exceptionally heavy. Apart from free medical and dental treatment and the free supply of remedies, the Fund provides in case of disablement from the second day onwards sick pay amounting to three quarters of the actual daily pay which the member has been receiving on the average, up to, but not exceeding, Marks 5.— per day. Other members of the family receive from the Fund free medical, dental, and hospital treatment and medicines. In the event of the death of a member, his wife, or a child the Fund furnishes burial money, which in the case of the husband's death is 25 times the amount of the daily earnings upon which the insurance is computed, but in no case less than Marks 50.—, in the case of the wife's death it is two thirds of the amount which would be due to the member, but in no case more than Marks 60.—, in the case of the death of a child over six weeks old one half of the amount which would be payable in the event of the father's death, but in no case more than Marks 30.—. Sick pay on account of illness or disablement is provided for a period not exceeding one year.¹ In cases of pregnancy and child birth the Fund assists female members during six weeks, which is the maximum period allowed by the law. In the event of the confinement of a members wife the Fund provides medical attendance to the amount of Marks 20.— in each case. During the treatment of members in hospitals the Fund pays the other members of the family a subsidy of 50 % of the insured earnings. Single men receive one eighth of their insured earnings by way of a subsidy. Where members are treated at sanatoria at the expense of the Public Insurance Department the Fund provides, in addition to one half the sick pay, demanded by section 18 of the German law relating to Compulsory Insurance against Disablement, a subsidy of one quarter of the average earnings for the benefit of the family.

¹ The extension of the sick pay to a period of a whole year was made in 1902.

A member of the Sick Fund may select his own physician or surgeon with this restriction, however, that he may not make a change within a year without having obtained the sanction of the Committee. The control of the patients, which is carried out on a very extensive scale, is performed by the chairman of the institution himself. In doubtful cases the patient is reexamined by one of the Professors of Medicine at the University of Jena. To keep the expenditure which is likely to arise from the free choice of a physician within the limits of sound economy, apart from the precautionary measures already mentioned, an arrangement has been made with the local Medical Union to the effect that the aggregate annual fee for each patient may not exceed Marks 10.—. In the event of the aggregate amount charged by way of fees exceeding this annual limit the institution is entitled to make uniform deductions from the accounts presented by the various physicians.

Irrespective of this compulsory Sick Fund the men of the Carl Zeiss Works established in 1902 a Supplementary Sick Fund, which has a membership of about 680. Its object is to supplement the sick pay furnished by the compulsory fund up to the full amount of the usual earnings of the members.

There is also an Abbe Fund which serves the purpose of supporting the members of the Sick Fund in such cases which fall outside the obligations of the Sick Fund and has been placed with the Management of the latter. This Abbe Fund consists of a reserve fund of which only the interest can be spent; in addition to which Annual contributions are made by the Firm.

In the matter of building and providing dwellings for their workmen and other employees the Zeiss Works have always adopted a negative attitude from motives of principle. However good may be the houses built by factory owners for their workmen experience has shown that in time of disputes and trouble they become almost invariably utensils of war calculated to place the men in a very doubtful position of political dependence, and thereby tending to prejudice the development of that very integrity of citizenship which ABBE desired to secure. On the other hand the firm makes advances to its members for building purposes at a low rate of interest, whereby many employees are enabled to become their own landlords. The Carl Zeiss Foundation maintains also friendly relations with the Jena Cooperative Building Society, which was established in 1896, having moreover placed at its

disposal a sinking fund of Marks 15000 and an amount of Marks 115000 at 3 % interest. In addition, the firm makes an annual contribution of Marks 900 towards the secretary's salary. The Jena Cooperative Building Society has so far erected 168 dwellings, of which 77 are let to employees of the Zeiss Works and 38 to employees of the Schott Glass Works, each tenement being provided with a garden. To aid it in its continued efforts the Society has been promised further contributions on the part of the firm of Carl Zeiss.

The firm is always ready to be approached by the employees with suggestions of improvement, and such of them as are found capable of practical application are rewarded by a premium. In this way 60 to 70 suggestions are submitted to the firm's approval in the course of the year, and generally more than one half have proved valuable and received a premium accordingly. The amount of the premium given is according to the importance of the suggestion. Amounts of 5 M., 10 M., 20 M., 30 M. and 50 M. are usually given. In single cases however amounts up to 200 M. could be given.

Good service is rendered by the firm to public health by the examination, at intervals of six months, of the juvenile works employees and apprentices which affords a means of recognising and treating disease, both established and incipient, at an early stage. The physician improves upon the occasion by giving the young people practical hints respecting nutrition, treatment of teeth, avoidance of the consumption of beer, etc.

Youths and apprentices whose parents do not live in Jena and those who, though resident in Jena, are known to be impecunious receive for their better nutrition a subsidy of 25 Pfg. (3 d) a day towards the cost of a good midday meal, whilst in cases of indigence free meals are provided. The total expenditure last year on this head amounted to over Marks 6000.

With the aid of funds largely contributed by the Carl Zeiss Foundation large public baths comprising a plunge bath, shower baths, sun, steam and medicinal baths, and a swimming bath have been built in Jena and opened in March 1909. The employees of the firms are entitled yearly to 52 baths, at half price, the other half of the charge being borne by the firm. For employees who have to perform dirty work etc. unavoidable in a factory a special bath has been provided at the Works.

The consumption of alcoholic beverages during working hours is prohibited under the terms of the agreement of service.¹ In 1905 an aerated water apparatus was, however, installed and during the hot season the employees are supplied at cost price with apollinaris and lemonade. Also since June 1906 milk is supplied at cost price in half litre bottles at 10 Pfg. The daily supply of this commodity averages 400 bottles; also rolls may be purchased.

Of other institutions the following may be mentioned. The Works Savings Bank pays 5 % interest on amounts up to Marks 3000. Men who have been in the employ of the firm over 12 months receive on their wedding three days extra pay or an extra 3 days holiday, with pay. The anniversary of 25 years service is commemorated by a present of Marks 100 and in addition to this one day's holiday, with pay, which he usually spends at home with his colleagues and friends who also make him a present. A representative of the Management of the Firm delivers to him the Greetings and Congratulations of same. Each year witnesses several recurrences of the event, in 1906/7 indeed it was celebrated on twenty occasions, in 1907/8 9 employees celebrated their 25th anniversary; 1908/9 17 employees, and in the current year 24 will enjoy this distinction. The firm assists by substantial grants the Arts and Crafts Schools, at one of which the apprentices and young artisans are bound to attend classes, the firm paying the necessary school fees. These students receive in addition to the school reports every six months from the firm a certificate of conduct, industry and capability, which has to be submitted to their respective parents. A football

¹ This regulation was introduced at the same time as the eight hours working day. The abolition of the beer drinking habit in working hours, which directly and indirectly occasioned much loss of time, has largely contributed to the success of the eight hours working day. ABBE, when urging the desirability of the departure, reminded the men that it was a scientifically established fact that the temporary stimulus which alcohol imparted was apparent only and was inevitably followed by a certain depression; hence, whilst it seemed momentarily to revive, its ultimate effect was to lame the available store of energy. While the working day contained 10 hours it was perhaps not easy to forego this delusive stimulus, but under the conditions of the eight hours day there was no justification for the use of the stimulant; he regarded it merely as the result of an established habit which in the interest of the rising generation the elders would do well to abjure. During the first year after the introduction of the eight hours day there were occasional symptoms of disapproval of the new regime, but soon the situation was accepted, and now the use of beer during working hours has ceased entirely.

club mustering five teams, 60 active and 60 passive members, and a Young Men's Association exercise a useful influence upon the youthful employees during their hours of freedom. Since 1907 Apprentices and young workmen participate, under the supervision of an older gentleman, each Summer in a 3 days tour through the Thüringen forest and Rhöngelbirge &c to which the firm contributes 5 M. per head. The Zeiss Male Choir (Gesangverein) boasts 125 active and 50 passive members and is one of the best choirs of Jena. The Carl Zeiss Foundation maintains its own fire brigade, which is made up of 125 voluntary members drawn from the staff of the two firms. In 1904 a Loan Department was established for the benefit of all connected with the firms of Carl Zeiss and Schott & Genossen in the form of a limited liability cooperative society, which at the present time counts 600 shareholders. Each share is worth Marks 5, and each shareholder's liability amounts to Marks 50.—. Both firms having furnished a considerable working capital the bank has been in a position to advance to its members about Marks 38900 annually.

In conclusion we will not omit to bear testimony to ABBE's last great work, the "*Volkshaus*" or People's House, which comprises public reading rooms with library, a literary museum, the Schaeffer Museum of Popular and Technical Physics, the Grand-ducal School of Arts and Crafts, a large Assembly Hall capable of accommodating 1500 to 1600 persons and well adapted for meetings, concerts, soirees, etc., a small hall to seat 200 to 300 persons and suitable for lectures, an art collection, music room, etc. The various sections of the reading rooms are well provided with newspapers and other periodicals respecting all political creeds without distinction, whilst the other rooms, the larger halls in particular, are at all times available for the meetings of any political or social section. It is not saying to much that the existence of the Volkshaus has done much to brighten the intellectual life of all sections of the population of Jena. Of this no better proof could be furnished than the long list of gatherings called together in the name of science and art and for the discussion of life's social problems, to say nothing of the immense popularity and extensive use of the reading rooms and lending library. In 1905 no less than 124195 volumes passed through the hands of 7349 readers, in 1906 129696 volumes were lent to 7876 readers, in 1907 128540 volumes to 8124 readers, in 1908 131560 volumes to 8560 readers, in 1909 134865 volumes

to 8800 readers. Last year the average number of books given out on 358 days was 376 volumes per day; in the preceding year it was 366. The library comprises 23000 volumes. The reading rooms provide 127 newspapers and 442 periodicals. These were read in 1909 by 175000 persons.

Special interest attaches to the efforts of the "People's Polytechnic and Entertainment Society" (Verein für Veranstaltung von Volkshochschulkursen und Volksunterhaltungsabenden), the magnitude of which has only been rendered possible by the existence of the Volkshaus. During each winter session four courses of six lectures are conducted with an average attendance of 250 to 300 students, also four popular theatre performances are given in the large hall before audiences of 750 persons, and two popular concerts presenting a selection of the lighter forms of classical music, the average attendance being 1600 on either occasion. In the spring of 1908 and 1909 two operatic performances were given by the members of the Ducal Court Opera Company of Dessau. Each of the four performances were attended by about 1500 persons. Tickets are mainly disposed off by the trade unions so as to secure preferential admission to the workpeople.

It is earnestly hoped that ABBE's great work and example may lead other factory owners to see in a new light the fundamental truths of the labour question in relation to the factory system and that it may encourage them to act in the light of this expanded vision. Prof. S. CZAPSKI, the trusted helper and successor of Prof. ABBE, has spoken well and truly when he said at the reformer's grave side: "It was his aim not only to adduce better conditions within the narrow limits of local industry and to weigh down traditional prejudices and their barring influence to betterment he also hoped that the fruits of his own endeavours might give courage and strength to others to achieve the like elsewhere to avert at this and that and yet another point the dangers which threaten to degrade an ever growing number of our people to political and economic serfdom."

Dr. Fr. Schomerus, Jena.

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